The Evening Sky Map

FREE* EACH MONTH FOR YOU TO EXPLORE, LEARN & ENJOY THE NIGHT SKY

WWW.SKYMAPS.COM

EQUATORIAL EDITION
NOVEMBER 2013

Sky Calendar – November 2013

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1 **Venus at greatest elongation,** 47° east of Sun (evening sky) at 8h UT. Mag. +4.4.

1 **Mercury at inferior conjunction** with the Sun at 20h UT. Mercury passes into the morning sky. Not visible.

3 **New Moon** at 12:48 UT. Start of lunation 1124.

3 **Total Solar Eclipse** from 11:05 to 14:28 UT, greatest eclipse at 12:48 UT. Totality visible along a narrow path between North Atlantic (sunrise) and equatorial Africa (sunset). Partial eclipse in most of Africa, NE South America, southern Europe, and east coast North America.

5 **Moon near Antares** (evening sky) at 12h UT.

6 **Moon at perigee** (closest to Earth) at 9h UT (365,361 km; angular size 32.7').

7 **Moon near Venus** (47° from Sun, evening sky) at 0h UT. Mag. −4.5.

10 **First Quarter Moon** at 5:58 UT.

17 **Full Moon** at 15:15 UT.

17 **Leonid meteor shower peaks** at 10h and 16h UT. Arises from debris ejected by Comet Tempel-Tuttle in 1533. Expect up to 15 meteors per hour under dark skies. Unfavorable this year due to strong moonlight.

18 **Moon near the Pleiades** (midnight sky) at 0h UT.

18 **Mercury at greatest elongation**, 20° west of Sun (morning sky) at 2h UT. Mag. −0.5.

18 **Comet ISON 0.4° N of Spica** (32° from Sun, morning sky) at 2h UT.

18 **Moon near Aldebaran** (morning sky) at 21h UT.

22 **Moon near Jupiter** (morning sky) at 3h UT. Mag. −2.5.

22 **Moon at apogee** (farthest from Earth) at 10h UT (distance 405,443 km; angular size 29.5').

23 **Moon near Beehive Cluster** (morning sky) at 16h UT.

25 **Moon near Regulus** (morning sky) at 13h UT.

25 **Last Quarter Moon** at 19:29 UT.

27 **Moon near Mars** (morning sky) at 13h UT. Mag. +1.3.

28 **Comet ISON at perihelion** at 23h UT.

29 **Moon very near Spica** (morning sky) at 19h UT. Occultation visible in Alaska.

More sky events and links at http://Skymaps.com/skycalendar/

All times in Universal Time (UT). (Singapore Standard Time = UT + 8 hours.)

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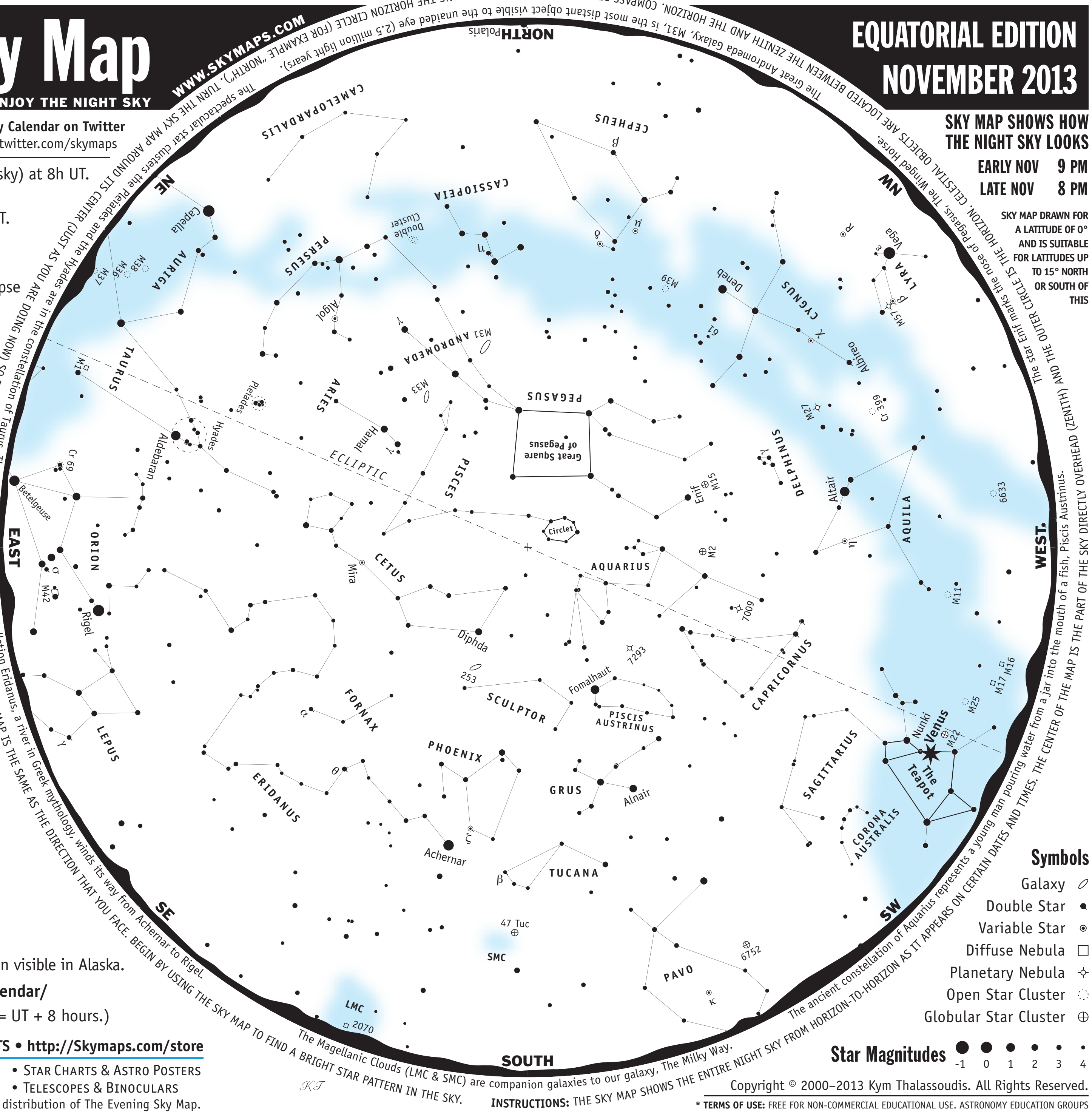
NORTH
Polaris
NE
EAST
SE
SOUTH
SW
WEST
NW
CAMELOPARDALIS
CEPHEUS
CASSIOPEIA
Double Cluster
PERSEUS
Algol
Capella
AURIGA
M36
M37
M38
TAURUS
M1
Pleiades
Hyades
Aldebaran
ARIES
Hamal
ANDROMEDA
M31
M33
PEGASUS
Great Square of Pegasus
PISCES
ECLIPTIC
Circlet
Enif
M15
M2
AQUARIUS
M39
Deneb
CYGNUS
61
Albireo
Vega
LYRA
M57
Cr 399
M27
DELPHINUS
Altair
AQUILA
6633
M11
7009
CAPRICORNUS
7293
Fomalhaut
PISCIS AUSTRINUS
SCULPTOR
253
Diphda
CETUS
Mira
Betelgeuse
Cr 69
ORION
M42
Rigel
LEPUS
FORNAX
ERIDANUS
PHOENIX
GRUS
Alnair
Achernar
TUCANA
47 Tuc
SMC
LMC
2070
PAVO
6752
SAGITTARIUS
Nunki
Venus
M22
The Teapot
M25
M17
M16
CORONA AUSTRALIS

INSTRUCTIONS: THE SKY MAP SHOWS THE ENTIRE NIGHT SKY FROM HORIZON-TO-HORIZON AS IT APPEARS ON CERTAIN DATES AND TIMES. THE CENTER OF THE MAP IS THE PART OF THE SKY DIRECTLY OVERHEAD (ZENITH) AND THE OUTER CIRCLE IS THE HORIZON. CELESTIAL OBJECTS ARE LOCATED BETWEEN THE ZENITH AND THE HORIZON. COMPASS DIRECTIONS ARE INDICATED ALONG THE HORIZON CIRCLE (FOR EXAMPLE, "NORTH"). TURN THE SKY MAP AROUND ITS CENTER (JUST AS YOU ARE DOING NOW) SO THE COMPASS DIRECTION THAT APPEARS ALONG THE BOTTOM OF THE MAP IS THE SAME AS THE DIRECTION THAT YOU FACE. BEGIN BY USING THE SKY MAP TO FIND A BRIGHT STAR PATTERN IN THE SKY.

The spectacular star clusters the Pleiades and the Hyades are in the constellation of Taurus, The Bull.

The constellation Eridanus, a river in Greek mythology, winds its way from Achernar to Rigel.

The Magellanic Clouds (LMC & SMC) are companion galaxies to our galaxy, The Milky Way.

The ancient constellation of Aquarius represents a young man pouring water from a jar into the mouth of a fish, Piscis Austrinus.

The star Enif marks the nose of Pegasus, The Winged Horse.

The Great Andromeda Galaxy, M31, is the most distant object visible to the unaided eye (2.5 million light years).

SKY MAP SHOWS HOW THE NIGHT SKY LOOKS

EARLY NOV	9 PM
LATE NOV	8 PM

SKY MAP DRAWN FOR A LATITUDE OF 0° AND IS SUITABLE FOR LATITUDES UP TO 15° NORTH OR SOUTH OF THIS

Symbols

Galaxy	⬯
Double Star	●
Variable Star	◉
Diffuse Nebula	□
Planetary Nebula	✧
Open Star Cluster	◌
Globular Star Cluster	⊕

Star Magnitudes

●	●	●	•	•	·
-1	0	1	2	3	4

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CELESTIAL OBJECTS

EQUATORIAL EDITION
NOVEMBER 2013

About the Celestial Objects

Listed on this page are several of the brighter, more interesting celestial objects visible in the evening sky this month (refer to the monthly sky map). The objects are grouped into three categories. Those that can be easily seen with the naked eye (that is, without optical aid), those easily seen with binoculars, and those requiring a telescope to be appreciated. **Note, all of the objects (except single stars) will appear more impressive when viewed through a telescope or very large binoculars.** They are grouped in this way to highlight objects that can be seen using the optical equipment that may be available to the star gazer.

Tips for Observing the Night Sky

When observing the night sky, and in particular deep-sky objects such as star clusters, nebulae, and galaxies, it's always best to observe from a dark location. Avoid direct light from street lights and other sources. If possible observe from a dark location away from the light pollution that surrounds many of today's large cities.

You will see more stars after your eyes adapt to the darkness—usually about 10 to 20 minutes after you go outside. Also, if you need to use a torch to view the sky map, cover the light bulb with red cellophane. This will preserve your dark vision.

Finally, even though the Moon is one of the most stunning objects to view through a telescope, its light is so bright that it brightens the sky and makes many of the fainter objects very difficult to see. So try to observe the evening sky on moonless nights around either New Moon or Last Quarter.

Astronomical Glossary

Conjunction – An alignment of two celestial bodies such that they present the least angular separation as viewed from Earth.

Constellation – A defined area of the sky containing a star pattern.

Diffuse Nebula – A cloud of gas illuminated by nearby stars.

Double Star – Two stars that appear close to each other in the sky; either linked by gravity so that they orbit each other (binary star) or lying at different distances from Earth (optical double). Apparent separation of stars is given in seconds of arc (").

Ecliptic – The path of the Sun's center on the celestial sphere as seen from Earth.

Elongation – The angular separation of two celestial bodies. For Mercury and Venus the greatest elongation occurs when they are at their most angular distance from the Sun as viewed from Earth.

Galaxy – A mass of up to several billion stars held together by gravity.

Globular Star Cluster – A ball-shaped group of several thousand old stars.

Light Year (ly) – The distance a beam of light travels at 300,000 km/sec in one year.

Magnitude – The brightness of a celestial object as it appears in the sky.

Open Star Cluster – A group of tens or hundreds of relatively young stars.

Opposition – When a celestial body is opposite the Sun in the sky.

Planetary Nebula – The remnants of a shell of gas blown off by a star.

Universal Time (UT) – A time system used by astronomers. Also known as Greenwich Mean Time. Singapore Standard Time is UT plus 8 hours.

Variable Star – A star that changes brightness over a period of time.

Easily Seen with the Naked Eye

Altair	Aql	●	Brightest star in Aquila. Name means "the flying eagle". Dist=16.8 ly.
Capella	Aur	●	The 6th brightest star. Appears yellowish in color. Spectroscopic binary. Dist=42 ly.
δ Cephei	Cep	⊙	Cepheid prototype. Mag varies between 3.5 & 4.4 over 5.366 days. Mag 6 companion.
Deneb	Cyg	●	Brightest star in Cygnus. One of the greatest known supergiants. Dist=1,400±200 ly.
Achernar	Eri	●	Brightest star in Eridanus, The River. Arabic name meaning "end of river". Dist=144 ly.
Vega	Lyr	●	The 5th brightest star in the sky. A blue-white star. Dist=25.0 ly.
Rigel	Ori	●	The brightest star in Orion. Blue supergiant star with mag 7 companion. Dist=770 ly.
Betelgeuse	Ori	●	One of the largest red supergiant stars known. Diameter=300 times that of Sun. Dist=430 ly.
Algol	Per	⦿	Famous eclipsing binary star. Magnitude varies between 2.1 & 3.4 over 2.867 days.
Fomalhaut	PsA	●	Brightest star in Piscis Austrinus. In Arabic the "fish's mouth". Dist=25 ly.
Pleiades	Tau	◌	The Seven Sisters. Spectacular cluster. Many more stars visible in binoculars. Dist=399 ly.
Hyades	Tau	◌	Large V-shaped star cluster. Binoculars reveal many more stars. Dist=152 ly.
Aldebaran	Tau	●	Brightest star in Taurus. It is not associated with the Hyades star cluster. Dist=66.7 ly.
Polaris	UMi	◖	The North Pole Star. A telescope reveals an unrelated mag 8 companion star. Dist=433 ly.

Easily Seen with Binoculars

M31	And	⬯	The Andromeda Galaxy. Most distant object visible to naked eye. Dist=2.5 million ly.
M2	Aqr	⊕	Resembles a fuzzy star in binoculars.
η Aquilae	Aql	⦿	Bright Cepheid variable. Mag varies between 3.6 & 4.5 over 7.166 days. Dist=1,200 ly.
M38	Aur	◌	Stars appear arranged in "pi" or cross shape. Dist=4,300 ly.
M36	Aur	◌	About half size of M38. Located in rich Milky Way star field. Dist=4,100 ly.
μ Cephei	Cep	⦿	Herschel's Garnet Star. One of the reddest stars. Mag 3.4 to 5.1 over 730 days.
Mira	Cet	⦿	Famous long period variable star. Mag varies between 3.0 & 10.1 over 332 days.
χ Cygni	Cyg	⦿	Long period pulsating red giant. Magnitude varies between 3.3 & 14.2 over 407 days.
M39	Cyg	◌	May be visible to the naked eye under good conditions. Dist=900 ly.
LMC	Dor	⬯	Large Magellanic Cloud. A neighbouring galaxy of the Milky Way. Dist=180,000 ly.
ε Lyrae	Lyr	◖	Famous Double Double. Binoculars show a double star. High power reveals each a double.
R Lyrae	Lyr	⦿	Semi-regular variable. Magnitude varies between 3.9 & 5.0 over 46.0 days.
Cr 69	Ori	◌	Lambda Orionis Cluster. Dist=1,630 ly.
M42	Ori	□	The Great Orion Nebula. Spectacular bright nebula. Best in telescope. Dist=1,300 light years.
κ Pavonis	Pav	⦿	Cepheid-type. Magnitude varies between 3.9 & 4.8 over 9.088 days.
6752	Pav	⊕	One of the better globular star clusters in the sky. Dist=14,000 ly.
M15	Peg	⊕	Only globular known to contain a planetary nebula (Mag 14, d=1"). Dist=30,000 ly.
Double Cluster	Per	◌	Double Cluster in Perseus. NGC 869 & 884. Excellent in binoculars. Dist=7,300 ly.
ζ Phoenicis	Phe	⊙	Eclipsing binary star and double (mag 8). Varies between 3.9 & 4.4 over 1.667 days.
253	Scl	⬯	Fine, large, cigar-shaped galaxy. Requires dark sky. Member of Sculptor Group.
47 Tucanae	Tuc	⊕	Spectacular object. Telescope will reveal stars. Near edge of SMC. Dist=15,000 ly.
β Tucanae	Tuc	◖	Complex multiple star. Binoculars show one pair. Telescope required to split primary star.
SMC	Tuc	⬯	Small Magellanic Cloud. Companion galaxy to Milky Way. Requires dark sky. Dist=210,000 ly.
Cr 399	Vul	◌	Coathanger asterism or "Brocchi's Cluster". Not a true star cluster. Dist=218 to 1,140 ly.

Telescopic Objects

γ Andromedae	And	◖	Attractive double star. Bright orange star with mag 5 blue companion. Sep=9.8".
7009	Aqr	✧	Saturn Nebula. Requires 8-inch telescope to see Saturn-like appendages.
7293	Aqr	✧	Helix Nebula. Spans nearly 1/4 deg. Requires dark sky. Dist=300 ly.
γ Arietis	Ari	◖	Impressive looking double blue-white star. Visible in a small telescope. Sep=7.8".
η Cassiopeiae	Cas	◖	Yellow star mag 3.4 & orange star mag 7.5. Dist=19 ly. Orbit=480 years. Sep=12".
Albireo	Cyg	◖	Beautiful double star. Contrasting colours of orange and blue-green. Sep=34.4".
61 Cygni	Cyg	◖	Attractive double star. Mags 5.2 & 6.1 orange dwarfs. Dist=11.4 ly. Sep=28.4".
γ Delphini	Del	◖	Appear yellow & white. Mags 4.3 & 5.2. Dist=100 ly. Struve 2725 double in same field.
θ Eridani	Eri	◖	Striking blue-white double star. Mags 3.2 & 4.3. Visible in a small telescope. Sep=8.2".
β Lyrae	Lyr	⊙	Eclipsing binary. Mag varies between 3.3 & 4.3 over 12.940 days. Fainter mag 7.2 blue star.
M57	Lyr	✧	Ring Nebula. Magnificent object. Smoke-ring shape. Dist=4,100 ly.
M11	Sct	◌	Wild Duck Cluster. Resembles a globular through binoculars. V-shaped. Dist=5,600 ly.
M1	Tau	□	Crab Nebula. Remnant from supernova which was visible in 1054. Dist=6,500 ly.
M33	Tri	⬯	Fine face-on spiral galaxy. Requires a large aperture telescope. Dist=2.3 million ly.
M27	Vul	✧	Dumbbell Nebula. Large, twin-lobed shape. Most spectacular planetary. Dist=975 ly.

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